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ABSTRACT

This paper examines the influence of presence or absence of a school on population changes in rural Iowa communities over 4 decades. Data were drawn from 1950 to 1990 decennial reports of the U.S. Bureau of the Census and annual reports on the location of schools from the Iowa Department of Education. Population changes were analyzed for 860 incorporated places in Iowa with less than 2,500 residents in 1950. Only grade schools and high schools were considered due to the changing definitions of middle schools. Results do suggest that the presence of a school facility tempers population change. However, findings also uphold the hypothesis that the location of a school facility in a community does not influence population change. Some communities with school facilities gained population but others did not; the same occurred in towns without schools, and percentage distributions between those with and without schools varied to a relatively small degree. It appears that relationships among factors influencing change in rural populations are complex, and that the correlation between the location of school facilities and population change is not as strong as heated arguments at the local level sometimes suggest. (RAH)

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Population Decline and the Closing of Schools

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Abstract

Many rural areas are attempting to hold off another round of consolidations in health services, social programs, and religious facilities. Education is at the forefront of this movement, and the demise of rural schools is related to population changes occurring in such areas. Questions are raised about whether having a school leads to population growth or shutting down school facilities leads to population loss. Answers are explored with data on school locations and rural incorporated places in Iowa from 1950 through 1990. Results are mixed; places with schools are not much more likely to gain or lose population than those without schools. In some cases, closing a school accelerates population decline, but in others it doesn't. Obviously, the relationship between population, the location of school facilities, and change on both of these factors is not as strong as heated arguments at the local level sometimes suggest.

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Population Decline and the Closing of Schools

One relationship between communities and schools often is accepted as a given. Local wisdom has it that primary and secondary school facilities and the people associated with them add to the vitality of the community. This relationship, with the community gaining because of the presence of the school, is one of the factors leading to cries of concern whenever school consolidations or closings are suggested. Perceptions of symbiotic relationships between schools and towns frequently are voiced, but underlying questions of fact seldom are raised. At the simplest level, for example, do towns with school facilities fare more positively on population change than those that do not have schools present? More importantly, at least from the point of view of citizens facing consolidation issues in their locales, does loss or gain of a school influence change in the total number of residents of the community? These questions, with answers based on data for Iowa, are at issue in this paper.

Schools and Communities

The school has been described as the center of many rural communities (Cousins, 1983; Forsythe et al. 1983; Haas 1990). Yet, the strength of the tie between a school and the area it serves has been questioned. Theobald (1990:1) for example, commented on "...the glowing irony in apparently successful schools (from an academic standpoint) situated in the midst of miserably failing communities." He continued with a statement that rural schools do not drive communities to function more fully. Indeed, Miller (1990:117) concluded, "Currently, attending school in a rural community means one thing to a great majority of rural youth--get out as quickly as you can." That's hardly the prescription for population growth in a locality. But Miller (1990:109) also noted concerns of small-town residents that what kept the community alive was the

school, quoting a superintendent who indicated that "Without the school, I think the community would wither and die...."

DeYoung and Howley (1990) supported this view; for many rural places, a major concern was the threat of school closure, a point of view seconded by Voth and Danforth (1981). And so it is stated in other countries; in Scotland, Forsythe et al. (1983:1) reported that "...the case against school closures has increasingly been argued in terms of their detrimental social effects on rural communities." And in Australia, Brown and Maisey (1980) noted that local residents believed the community's existence was threatened by school closure.

Kay (1983) suggested that when schools are closed, rural population declines. Yet Forsythe et al. (1983), after noting that few tests of the relationship between presence or absence of a school and changes in population had been conducted, concluded that two studies in England provided little support for losing a school causing population decline; nor could they claim from their study of Scottish primary schools that closures can be blamed for depopulation occurring in rural areas. Haas (1990), writing about population issues, also provided evidence that the relationship between school and community is not as strong as commonly thought. Haas believed that additional population decline could occur in a community losing its school, but the winning community would gain only a few staff members.

These comments from Forsythe et al. (1983) and Haas (1990), plus those of Voth and Danforth (1981) on the lack of relationship between change in businesses and schools in rural communities, suggest two hypotheses. First, communities with school facilities will be no more likely to gain or lose population than those without such facilities. Second, the gain or loss of a school will not be related to change in population in a community.

Methods

To test these hypotheses, data for communities in Iowa were examined. The populations of incorporated places from 1950 to 1990 were obtained from decennial reports from the U.S. Bureau of the Census (1993). These numbers were merged with data from annual reports available through the Iowa Department of Education (1990) on the location of school facilities. The years selected were those in which population censuses had occurred from 1950 through 1990. Both grade school and high school facilities were included, although the results will be reported for each separately; middle school buildings were not examined, primarily because of the changing definitions of such units over the period studied.

For this paper, the 860 incorporated places in Iowa that had fewer than 2,500 inhabitants as of 1950 were selected. These were rural according to the definition used by the census bureau. Those places that increased above that limit in future censuses were retained because they met the rural criteria in the initial period. Places that had more than 2,500 residents in 1950 but decreased in future censuses to populations under that level were not included, however. School facilities located outside city limits were allocated to the nearest incorporated place.

Results

Incorporated places that had high school facilities were more likely to increase their populations by at least 15 percent than places without high schools in only 3 of the 10 time periods noted in Table 1. In only two periods (1950-1960, 1950-1970) was the difference greater than 10 percentage points, however. This suggestion that places without high schools fared better on population is tempered when the data on increases of 5 to 14.9 percent are examined, however; in 9 of the 10 periods, places with high schools were more likely to gain at this level than were those without such facilities. Indeed, when the two categories reporting increase are summed in Table 1, the

differences between places with and without high schools are within 10 percentage points for all periods except 1960-1980 and 1970-1980.

Places without schools were more likely to report substantial population declines in each period; in 5 of the 10, differences between places with and without high schools exceeded 10 percentage points in the category of greatest loss. In two periods (1970-1990, 1980-1990), differences were greater than 20 percentage points. But again a reversal occurred in the category of moderate decrease, where places with schools had higher percentages in 6 of the 10 periods. Incorporated places with high schools also had higher percentages in the category of little change, which included those with less than a five percent gain or loss; this occurred in each period.

The results concerning the location of elementary schools tend to mirror those for high schools. Places without elementary schools were in the categories of greatest change more frequently than those with such schools, while those with such schools were more likely to be found in the categories of moderate or little change (Table 2). Although more towns retained an elementary school than a high school over the period, the percentage distributions remain remarkably similar in the first two tables.

The loss of a high school facility is related to population change. In 9 of the 11 periods reported in Table 3, places losing a high school had higher percentages in the category of greatest population decline than the three other groups (no school at either point, gained a school, school at both points). Still, not all towns losing a high school declined in population; indeed, at least a quarter of these places gained 5 percent or more in 10 of the 11 periods. Of course, the percentages of places with increases were even higher in the other groups. Percentages reporting increases did not differ greatly between those either having a high school at both times or at neither, although those not having a high school at the beginning or end of a period tended to decrease by at least 15 percent much more frequently than those with a high school at both times. Too few rural places gained a high school to draw conclusions from the results.

The data for change in elementary schools yield findings similar to those for change in high schools (Table 4). Again, the difference tends to be greatest on the category in which population declined at least 15 percent, with towns losing elementary schools from 1950 to 1960 more likely to have greater percentages at this level of population change than the other groups. In later comparisons, however, those with no elementary school at the beginning or end of a decade had slightly higher percentages declining by 15 percent or more than did those losing a school. Usually at least 25 percent of even those communities losing an elementary school increased their populations by 5 percent of more no matter what period was examined.

Conclusions

The results suggest that the presence of a school facility tempers population change; places with a high school or an elementary school tend to have higher percentages in the middle of the population change distribution, while those without such facilities are more frequently at either end--relatively high increase or decrease. But, in general, the first hypothesis, that the location of a school facility in a community would not influence population change, is upheld. Some communities with school facilities gained population but others didn't; the same occurred in towns without schools, and percentage distributions between those with and without schools varied to a relatively small degree.

Findings related to the second hypothesis are mixed; more incorporated places losing a school lost population than gained; and, where sufficient cases allowed for a test, more of those gaining school facilities increased than decreased in population. While these results do not support the hypothesis that gain or loss of a school will not be related to change in population in a community, the percentage distributions of places losing a school do not vary greatly from towns never having such a facility nor, in some cases, from those having a school throughout a period studied. Some towns

with a school at both points decline while others grow, a situation that also occurs in places with no school at either time or those gaining or losing a facility.

Official policies long have favored reorganization of local school systems in rural America, with an emphasis on consolidation (DeYoung and Howley 1990). That has occurred in other countries as well (Forsythe et al. 1983; Brown and Maisey 1980). That reorganization is evident in these Iowa data, with progressively smaller numbers of communities reporting either elementary or high schools from 1950 through 1990. As a group, however, those that have retained their schools have not fared that much better on population change than those never having such facilities.

Kay (1983:9) was seemingly straightforward in his conclusion of a causal relationship, with communities losing population tending to lose their schools; "...many of those communities which lost schools have ceased to exist." But in the next sentence, he noted that "...closing...schools...contributes to the decline of rural populations..." (see also Forsythe et al. 1983). So which comes first? Is it that a loss of population leads to closing schools or is it that closing schools leads to loss of population? These results from Iowa suggest that the relationship between changes in school facilities and population are not of sufficient strength to suggest that one causes the other. Besides, residents of communities in which schools have closed probably don't care about causal relationships. Some communities obviously are better able to weather the closing of school facilities than others. Similarly, some places take advantage of schools located within the locality to build the population while others do not. And some towns have flourished without having schools located within their boundaries.

Rural development proponents usually include a wide variety of community organizations and agencies, including those related to education, as they plan new programs and work to entice people to move to an area or at least stem the flow outward. Mulkey (1992) suggests that the relationship between development and

education can be overstated, however. And Smith (1984) sees potential collisions between schools and communities. Mulkey (1992) concludes that educational efforts related to development and forestalling collisions between these areas can occur in both growing and declining communities.

These findings from Iowa and comments from those writing about rural development support Nactigal's (1982) call for examining different types of rural communities. Clearly, the presence or absence of a school is not sufficiently powerful to explain population change by itself, nor is there a relationship of much magnitude between changes in local businesses and population (Voth and Danforth 1981). Forsythe et al. (1983:6) summarized the arguments in the following manner:

> Depopulation cannot be blamed on school closures; the relationships between population, job opportunities and services (including education) are too complex to allow any simple conclusions about cause and effect. In short, the social and community impacts of the closure of rural ... schools must be seen in the wider context of the processes of social change taking place in rural areas within which educational reorganisation is but one element.

Similarly, population gain cannot be attributed to the presence of or the addition of a school facility; the relationship between population, the location of school facilities, and change on both of these factors is not as strong as heated arguments at the local level sometimes suggest. Social change in rural areas occurs in all institutional areas affecting local residents. Praise or blame for population change should not be limited to school facilities or any one of the other variables at work in rural areas; the relationships between factors influencing rural changes are more complex than that.

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Table 1. Change in population in Iowa incorporated places with and without high school facilities at the beginning of the time period.

Time Period	Change in Population: Decrease 15% or more	Decrease 5%-14.9%	Little Change	Increase 5%-14.9%	Increase 15% or more	(N)
1950-1960:						
With school	11.3%	22.5	30.0	20.7	15.5	653
Without school	20.8%	20.3	17.9	14.5	26.6	207
1950-1970:						
With school	24.5%	17.0	18.7	13.5	26.3	653
Without school	31.9%	11.1	12.6	7.2	37.2	207
1950-1980:						
With school	22.8%	13.2	15.5	12.6	36.0	653
Without school	27.5%	11.6	11.1	5.8	44.0	207
1950-1990:						
With school	37.1%	11.2	12.1	11.5	28.3	653
Without school	41.1%	9.7	8.7	4.8	35.7	207
1960-1970:						
With school	9.3%	20.6	33.8	18.6	17.8	506
Without school	20.3%	21.5	24.3	10.5	23.4	354
1960-1980:						
With school	10.5%	15.4	19.8	19.0	35.4	506
Without school	22.6%	16.7	17.5	13.8	29.4	354
1960-1990:						
With school	27.5%	17.2	18.2	11.7	25.5	506
Without school	39.8%	17.8	10.7	7.6	24.0	354
1970-1980:						
With school	0.9%	8.0	29.6	35.1	26.4	348
Without school	10.7%	14.6	26.6	21.5	26.6	512
1970-1990:						
With school	13.2%	23.3	27.9	14.7	21.0	348
Without school	33.8%	19.3	15.6	12.9	18.4	512
1980-1990:						
With school	13.4%	44.3	31.8	8.2	2.3	343
Without school	33.7%	34.2	18.8	8.9	4.4	517

Table 2. Change in population in Iowa incorporated places with and without elementary school facilities at the beginning of the time period.

Time Period	Change in Population					
	Decrease 15% or more	Decrease 5%-14.9%	Little Change	Increase 5%-14.9%	Increase 15% or more	(N)
1950-1960:						
With school	11.3%	22.6	30.0	20.6	15.4	654
Without school	20.9%	19.9	18.0	14.6	26.7	206
1950-1970:						
With school	24.5%	17.1	18.7	13.5	26.3	654
Without school	32.0%	10.7	12.6	7.3	37.4	206
1950-1980:						
With school	22.8%	13.1	15.6	12.5	35.9	654
Without school	27.7%	11.7	10.7	5.8	44.2	206
1950-1990:						
With school	37.0%	11.3	12.1	11.5	28.1	654
Without school	41.3%	9.2	8.7	4.9	35.9	206
1960-1970:						
With school	11.8%	22.0	32.4	17.2	16.5	635
Without school	19.6%	17.8	22.7	9.8	30.2	225
1960-1980:						
With school	12.6%	17.0	20.5	18.1	31.8	635
Without school	23.6%	12.9	14.2	13.3	36.0	225
1960-1990:						
With school	30.2%	18.1	16.9	11.0	23.8	635
Without school	39.1%	15.6	10.2	7.1	28.0	225
1970-1980:						
With school	3.6%	11.9	30.4	28.4	25.8	616
Without school	14.8%	12.3	21.3	23.4	28.3	244
1970-1990:						
With school	21.3%	21.6	22.9	14.4	19.8	616
Without school	36.1%	19.3	14.8	11.5	18.4	244
1980-1990:						
With school	17.5%	42.9	28.8	7.3	3.6	504
Without school	37.1%	31.7	17.1	10.4	3.7	356

Table 3. Change in population in Iowa incorporated places by change in high school facilities.

Time Period	Change in Population: Decrease 15% or more	Decrease 5%-14.9%	Little Change	Increase 5%-14.9%	Increase 15% or more	(N)
1950-1960 School/ 1950-1960 Population:						
No school, no school	21.3%	20.3	16.8	14.9	26.7	202
No school, school	0.0%	20.0	60.0	0.0	20.0	5
School, no school	25.7%	25.7	23.7	11.8	13.2	152
School, school	7.0%	21.6	31.9	23.4	16.2	501
1950-1960 School/ 1950-1970 Population:						
No school, no school	32.2%	10.9	11.9	7.4	37.6	202
No school, school	20.0%	20.0	40.0	0.0	20.0	5
School, no school	43.4%	13.8	13.2	11.8	17.8	152
School, school	18.8%	18.0	20.4	14.0	28.9	501
1950-1960 School/ 1950-1980 Population:						
No school, no school	28.2%	11.4	11.4	5.0	44.1	202
No school, school	0.0%	20.0	0.0	40.0	40.0	5
School, no school	43.4%	12.8	13.2	8.6	23.0	152
School, school	16.6%	13.6	16.2	13.8	39.9	501
1950-1960 School/ 1950-1990 Population:						
No school, no school	41.1%	9.9	8.4	5.0	35.6	202
No school, school	40.0%	0.0	20.0	0.0	40.0	5
School, no school	55.9%	9.2	9.9	6.6	18.4	152
School, school	31.3%	11.8	12.8	13.0	31.1	501
1960-1970 School/ 1960-1970 Population:						
No school, no school	20.3%	21.5	24.4	10.8	23.2	349
No school, school	20.0%	20.0	20.0	0.0	40.0	5
School, no school	21.5%	27.0	19.6	16.6	15.3	163
School, school	3.5%	17.5	40.5	19.5	19.0	343
1960-1970 School/ 1960-1980 Population:						
No school, no school	22.6%	16.6	17.8	13.8	29.2	349
No school, school	20.0%	20.0	0.0	20.0	40.0	5
School, no school	23.3%	20.9	19.0	8.6	28.2	163
School, school	4.4%	12.8	20.1	23.9	38.8	
1960-1970 School/ 1960-1990 Population:						
No school, no school	39.8%	18.1	10.6	7.7	23.8	349
No school, school	40.0%	0.0	20.0	0.0	40.0	5
School, no school	45.4%	17.2	10.4	7.4	19.6	163
School, school	19.0%	17.2	21.9	13.7	28.3	343

Table 3. Change in population in Iowa incorporated places by change in high school facilities (continued).

Time Period	Change in Population: Decrease 15% or more	Decrease 5%-14.9%	Little Change	Increase 5%-14.9%	Increase 15% or more	(N)
1970-1980 School/ 1970-1980 Population:						
No school, no school	10.8%	14.8	26.6	21.5	26.4	508
No school, school	0.0%	0.0	25.0	25.0	50.0	4
School, no school	0.0%	22.2	33.3	33.3	11.1	9
School, school	0.9%	7.7	29.5	35.1	26.8	339
1970-1980 School/ 1970-1990 Population:						
No school, no school	34.1%	19.5	15.4	12.8	18.3	508
No school, school	0.0%	0.0	50.0	25.0	25.0	4
School, no school	55.6%	33.3	0.0	11.1	19.4	9
School, school	12.1%	23.0	28.6	14.7	21.5	339
1980-1990 School/ 1980-1990 Population:						
No school, no school	33.7%	34.3	18.6	8.9	4.5	516
No school, school	0.0%	0.0	100.0	0.0	0.0	1
School, no school	25.6%	38.3	24.0	8.6	0.0	56
School, school	9.8%	45.3	32.8	9.4	2.8	287
1950-1990 School/ 1950-1990 Population:						
No school, no school	41.1%	9.9	8.9	5.0	35.1	202
No school, school	40.0%	0.0	0.0	0.0	60.0	5
School, no school	52.7%	9.7	11.6	7.0	18.9	370
School, school	16.6%	13.1	12.7	17.3	40.3	283

Table 4. Change in population in Iowa incorporated places by change in elementary school facilities.

Time Period	Change in Population: Decrease 15% or more	Decrease 5%-14.9%	Little Change	Increase 5%-14.9%	Increase 15% or more	(N)
1950-1960 School/ 1950-1960 Population:						
No school, no school	20.1%	20.1	16.2	16.2	27.4	179
No school, school	25.9%	18.5	29.6	3.7	22.2	27
School, no school	26.1%	19.6	23.9	13.0	17.4	46
School, school	10.2%	22.9	30.4	21.2	15.3	608
1950-1960 School/ 1950-1970 Population:						
No school, no school	30.7%	10.6	12.8	6.7	39.1	179
No school, school	40.7%	11.1	11.1	11.1	25.9	27
School, no school	45.7%	6.5	10.9	13.0	23.9	46
School, school	22.9%	17.9	19.2	13.5	26.5	608
1950-1960 School/ 1950-1980 Population:						
No school, no school	26.8%	11.7	11.2	4.5	45.8	179
No school, school	33.3%	11.1	7.4	14.8	33.3	27
School, no school	50.0%	4.3	13.0	8.7	23.9	46
School, school	20.7%	13.8	15.8	12.8	36.8	608
1950-1960 School/ 1950-1990 Population:						
No school, no school	40.2%	10.1	7.8	5.0	36.9	179
No school, school	48.1%	3.7	14.8	3.7	29.6	27
School, no school	56.5%	13.0	6.5	2.2	21.7	46
School, school	35.5	11.2	12.5	12.2	28.6	608
1960-1970 School/ 1960-1970 Population:						
No school, no school	23.2%	17.9	25.0	8.3	25.6	168
No school, school	8.8%	17.5	15.8	14.0	43.9	57
School, no school	19.7%	28.9	25.0	18.4	7.9	76
School, school	10.7%	21.1	33.5	17.0	17.7	559
1960-1970 School/ 1960-1980 Population:						
No school, no school	28.6%	11.9	14.3	14.9	30.4	168
No school, school	8.8%	15.8	14.0	8.8	52.6	57
School, no school	23.7%	17.1	22.4	10.5	26.3	76
School, school	11.1%	17.0	20.2	19.1	32.6	559
1960-1970 School/ 1960-1990 Population:						
No school, no school	43.5%	17.9	9.5	5.4	23.8	168
No school, school	26.3%	8.8	12.3	12.3	40.4	57
School, no school	40.8%	19.7	10.5	13.2	15.8	76
School, school	28.8%	17.9	17.7	10.7	24.9	559

Table 4. Change in population in Iowa incorporated places by change in elementary school facilities (continued).

Time Period	Change in Population: Decrease 15% or more	Decrease 5%-14.9%	Little Change	Increase 5%-14.9%	Increase 15% or more	(N)
1970-1980 School/ 1970-1980 Population:						
No school, no school	15.0%	12.8	21.4	22.6	28.2	234
No school, school	10.0%	0.0	20.0	40.0	30.0	10
School, no school	8.2%	19.7	27.0	27.0	18.0	122
School, school	2.4%	9.9	31.2	28.7	27.7	494
1970-1980 School/ 1970-1990 Population:						
No school, no school	35.9%	19.2	14.5	12.0	18.4	234
No school, school	40.0%	20.0	20.0	0.0	20.0	10
School, no school	36.1%	22.1	13.9	16.4	11.5	122
School, school	17.6%	21.5	25.1	14.0	21.9	494
1980-1990 School/ 1980-1990 Population:						
No school, no school	38.2%	31.7	16.0	10.4	3.8	338
No school, school	16.7%	33.3	38.9	11.1	0.0	18
School, no school	31.1%	32.0	27.2	7.8	1.9	103
School, school	14.0%	45.6	29.2	7.2	4.0	401
1950-1990 School/ 1950-1990 Population:						
No school, no school	45.9%	9.9	8.7	5.2	30.1	172
No school, school	17.6%	5.9	8.8	2.9	64.7	34
School, no school	56.5%	9.7	10.0	7.4	16.4	269
School, school	23.4%	12.5	13.5	14.3	36.4	385